

Amendments to Claims

Claims 1-4 (Canceled)

5. (Previously presented): A DNA fragment comprising a nucleic acid sequence according to claim 25.
6. (Previously presented): A recombinant DNA molecule comprising a nucleic acid sequence according to claim 25, under the control of a functionally linked promoter.
7. (Previously presented): A live recombinant carrier comprising a nucleic acid sequence according to claim 25.
8. (Previously presented): A host cell comprising a nucleic acid sequence according to claim 25.

Claims 9-18 (canceled)

19. (Previously presented): A vaccine for combating *Brachyspira hyodysenteriae* infection comprising antibodies against a lipoprotein according to claim 29, and a pharmaceutically acceptable carrier.

20. (Previously presented): The vaccine according to claim 19, comprising an adjuvant.
21. (Previously presented): The vaccine according to claim 19, comprising an additional antigen derived from another swine pathogen, an antibody against such an antigen or genetic information encoding said antigen.
22. (Previously presented): The vaccine according to claim 21, wherein said pathogen is selected from the group consisting of Pseudorabies virus, Porcine influenza virus, Porcine parvo virus, Transmissible gastro-enteritis virus, Rotavirus, *Escherichia coli*, *Erysipelo rhusiopathiae*, *Bordetella bronchiseptica*, *Salmonella cholerasuis*, *Haemophilus parasuis*, *Pasteurella multocida*, *Streptococcus suis*, *Mycoplasma hyopneumoniae* and *Actinobacillus pleuropneumoniae*.

Claim 23 (Cancel)

24. (Currently amended): A diagnostic kit for detecting *Brachyspira hyodysenteriae* or antibodies thereto, comprising ~~a nucleic acid sequence according to claim 25, or a~~ an immunogenic 61kD *Brachyspira hyodysenteriae* lipoprotein, as measured by SDS-PAGE, or antigenic fragment thereof ~~encoded by said sequence, or antibodies that are reactive with said lipoprotein.~~

25. (Previously presented): A nucleic acid sequence encoding an immunogenic 61kD *Brachyspira hyodysenteriae* lipoprotein, as measured by SDS-PAGE.
26. (Previously presented): The nucleic acid sequence of claim 25, wherein the 61 kD *Brachyspira hyodysenteriae* lipoprotein has the amino acid sequence of SEQ ID NO:2.
27. (Previously presented): A nucleic acid sequence encoding an immunogenic 20 kD *Brachyspira hyodysenteriae* lipoprotein, as measured by SDS-PAGE.
28. (Previously presented): The nucleic acid sequence of claim 27, wherein the 20 kD *Brachyspira hyodysenteriae* lipoprotein has the amino acid sequence of SEQ ID NO:4.
29. (Currently amended): An isolated **and purified** immunogenic *Brachyspira hyodysenteriae* lipoprotein of 61 kD, as measured by SDS-PAGE.
30. (Currently amended): The isolated **and purified** immunogenic *Brachyspira hyodysenteriae* lipoprotein of claim 29 having the amino acid sequence of SEQ ID NO: 2.
31. (Previously presented): An isolated immunogenic *Brachyspira hyodysenteriae* lipoprotein of 20 kD, as measured by SDS-PAGE.

32. (Previously presented): The isolated immunogenic *Brachyspira hyodysenteriae* lipoprotein of claim 31 having the amino acid sequence of SEQ ID NO:4.
33. **(Currently amended)**: An immunogenic composition comprising an immunogenically effective amount of the *Brachyspira hyodysenteriae* lipoprotein of claim 29 and a pharmaceutically acceptable carrier.
34. (Previously presented): An immunogenic composition comprising an effective amount of the *Brachyspira hyodysenteriae* lipoprotein of claim 31 and a pharmaceutically acceptable carrier.
35. (Previously presented): An immunogenic composition comprising an immunogenically effective amount of a nucleic acid sequence selected from the group consisting of a DNA fragment, a recombinant DNA molecule and a live recombinant carrier, or host cell comprising said nucleic acid sequence, wherein said nucleic acid sequence is the nucleic acid sequence of claim 25.
36. (Previously presented): An immunogenic composition comprising an immunogenically effective amount of a nucleic acid sequence selected from the group consisting of a DNA fragment, a recombinant DNA molecule and a live recombinant carrier, or a host cell comprising said nucleic sequence, wherein said nucleic acid sequence is the nucleic acid sequence of claim 27.

37. (Previously presented): A DNA fragment comprising a nucleic acid sequence according to claim 27.
38. (Previously presented): A recombinant DNA molecule comprising a nucleic acid sequence according to claim 27, under the control of a functionally linked promoter.
39. (Previously presented): A live recombinant carrier comprising a nucleic acid sequence according to claim 27.
40. (Previously presented): A host cell comprising a nucleic acid sequence according to claim 27.
41. (Previously presented): A diagnostic kit for detecting *Brachyspira hyodysenteriae* or antibodies thereto, comprising a nucleic acid sequence according to claim 27, or a lipoprotein or antigenic fragment thereof encoded by said sequence, or antibodies that are reactive with said lipoprotein.
42. (Previously presented): A vaccine for combating *Brachyspira hyodysenteriae* infection, comprising antibodies against a lipoprotein according to claim 31 and a pharmaceutically acceptable carrier.
43. (Previously presented): The vaccine according to claim 42, comprising an

adjuvant.

44. (Previously presented): The vaccine according to claim 42, comprising an additional antigen derived from another swine pathogen, an antibody against such an antigen or genetic information encoding said antigen.
45. (Previously presented): The vaccine according to claim 44, wherein said pathogen is selected from the group constituting of Pseudorabies virus, Porcine influenza virus, Porcine parvo virus, Transmissible gastro-enteritis virus, Rotavirus, *Escherichia coli*, *Erysipelothrix rhusiopathiae*, *Bordetella bronchiseptica*, *Salmonella choleraesuis*, *Haemophilus parasuis*, *Pasteurella multocida*, *Streptococcus suis*, *Mycoplasma hyopneumoniae* and *Actinobacillus pleuropneumoniae*.
46. (New): A method for protecting swine against a *Brachyspira hyodysenteriae*, comprising administering an immunogenically effective amount of the immunogenic composition of claim 33.
47. (New): A method for protecting swine against *Brachyspira hyodysenteriae*, comprising administering an immunogenically effective amount of the lipoprotein of claim 30.